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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,243	07/29/2005	Yuichi Takai	112857-463	9242
29175 7590 08/06/2008 BELI., BOYD & LLOYD, LLP P. O. BOX 1135 CHICAGO, IL 60690				
EXAMINER				
HAN, KWANG S				
ART UNIT		PAPER NUMBER		
1795				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/539,243

Applicant(s)

TAKAI, YUICHI

Examiner

Kwang Han

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 13-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date 8/8/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. A substitute specification excluding the claims is required pursuant to 37 CFR 1.125(a) because the applicant has failed to include a statement that the substitute specification includes no new matter and an accompanying clean version (without markings).

A substitute specification must not contain new matter. The substitute specification must be submitted with markings showing all the changes relative to the immediate prior version of the specification of record. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. An accompanying clean version (without markings) and a statement that the substitute specification contains no new matter must also be supplied. Numbering the paragraphs of the specification of record is not considered a change that must be shown.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 13-16, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Goto et al. (JP 07-249419, as cited in IDS, online translation).

5. Regarding claim 13, Goto et al. is directed towards a fuel cell separator comprised of the following:

- a separator body adapted to contact with a generating element (2, 3) creating a generating cell [0041, 0042],
- a fluid oxidant supply channel (60) formed on separator body (1), and
- a fluid oxidant supplying means (59) provided on separator body for supplying fluid oxidant into the fluid oxidant channel (Drawings 2 and 3).

Regarding claim 14, Goto et al. discloses a fluid oxidant supply channel (60) having an opening exposed to one end of the separator body (Drawing 4) and a fluid oxidant supplying means (59) provided at the opening to provide a flow of fluid oxidant in the supply channel (Drawing 4) [Abstract].

Regarding claim 15, Goto et al. is directed towards a fluid oxidant supply channel comprising a plurality of channels formed on the separator body (Drawing 4) and each of the channels has an opening with a plurality of supplying means provided at the

openings of the channels to individually make a flow of the fluid oxidant in the channels [Abstract].

Regarding claim 16, Goto et al. is further directed towards a separator with a plurality of groups of adjacent channels (60) with each group of adjacent channels having an opening (Drawing 5) and a fluid oxidant supplying means (59) provided at the opening of the groups of the adjacent channels.

Regarding claim 23, the teachings of Goto et al. as discussed above are herein incorporated. Goto et al. is further directed towards a fuel cell body formed by stacking a plurality of generating cells with a pair of separators [0040] (Drawing 2).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. as applied to claim 13 and 14 above, and further in view of Shiue et al. (US 6500575).

Regarding claims 17-20 the teachings of Goto as discussed above are herein incorporated. Goto et al. discloses a fluid oxidant supply means (59, 69) having a fin to be oscillated (Drawing 3) to provide a flow of said fluid oxidant and an actuator (bimetal) [0018, 0020] comprised of a shape memory alloys [0020] with different coefficients of thermal expansion [0045] for driving the fin but is silent towards the fluid oxidant supply means being a fan.

Shiue teaches the use of a micro fan in a zinc-air cell to control air flow between air pathways [Abstract] which are fabricated with an actuator comprising a piezoelectric (Column 5, Lines 20-46) for the benefit of providing air draft in the cell used to generate electricity.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Shiue's micro fan as the fluid oxidant supply means in Goto's fuel cell for the benefit of providing greater air draft in the fuel cell to improve power generation.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. as applied to claim 13 above, and further in view of Kobayashi (US 5258239).

Regarding claim 21, the teachings of Goto et al. as discussed above are herein incorporated. Goto et al. discloses a fluid oxidant supply means but is silent towards the use of a diaphragm pump.

Kobayashi teaches the use of a diaphragm pump (Figure 2B) in a metal-air cell to provide air flow which is integrated with the cell casing (1) which forms the air flow channel (2) to provide air supply control and enhance the electrical characteristics of the cell (Column 2, Lines 14-18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Kobayashi's diaphragm pump integrated in Goto's separator fuel cell for the benefit of providing air supply control and enhance the electrical characteristics of the cell.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. as applied to claim 14 above, and further in view of Shiue et al. (US 6500575) and Khandkar et al. (US 5856035).

The teachings of Goto et al. as discussed above are herein incorporated. Goto further discloses the fluid oxidant channels to be formed inside of the separator body,

extending along the surface (Drawings 5, 6), but is silent towards the opening elongated in the transverse direction and the fluid oxidant supply means comprising a rotary fan.

Khandkar teaches the use of a separator (44) which includes a trough structure (40, Figure 1) having an elongated opening for the benefit of providing cavities for fuel or air flow (Column 6, Lines 17-25; Figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Khandkar's elongated opening within the separator structure of Goto's fuel cell to provide for a larger cavity to increase fuel and air flow.

Shiue et al. teaches the use of a micro rotary fan (Column 5, Lines 38-41) in a zinc-air cell to control air flow between separators [Abstract] for the benefit of providing air draft in the cell used to generate electricity.

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Shiue's micro rotary fan in Goto's separator modified by Khandkar's elongated opening for the benefit of providing the maximum air draft required to provide the greatest area for reaction to generate electricity.

12. Claim 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Gott et al. in view of Pratt et al. (US 6127058).

The teachings of Gott et al. as discussed above are herein incorporated. The applicant is directed towards the discussion concerning claim 13 above. Gott is silent towards an electronic applied device comprising a board wherein pluralities of fuel cell bodies are provided.

Pratt teaches a planar fuel cell where a plurality of fuel cell bodies (Figure 2; Column 4, Lines 31-38) are connected with each other on a board (24, frame) for the benefit of minimizing seals, piping, and electrical interconnections.

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Pratt's planar fuel cell arrangement in Gott's fuel cell for the benefit of minimizing the fuel cell profile and use of seals, piping and electrical interconnections.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang Han whose telephone number is (571) 270-5264. The examiner can normally be reached on Monday through Friday 8:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. H./
Examiner, Art Unit 1795

/Susy Tsang-Foster/
Supervisory Patent Examiner, Art Unit 1795